

## PROPOSAL EVALUATION

### *Proposition 84 Integrated Regional Water Management (IRWM) Grant Program*

#### *Implementation Grant, Round 1, FY 2010-2011*

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<b>Applicant</b>	Root Creek Water District	<b>Amount Requested</b>	\$ 9,413,947
<b>Proposal Title</b>	Madera Region IWMP Implementation Grant Application	<b>Total Proposal Cost</b>	\$ 14,032,464

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#### PROPOSAL SUMMARY

Four projects are included in the proposal: (1) Ash Slough Arundo Eradication and Sand Removal Project, (2) Cottonwood Dry Berenda Creek Arundo Eradication and Sand Removal Project, (3) Root Creek In-Lieu Groundwater Recharge Project, and (4) Sierra National Forest Fuels Reduction Project.

#### PROPOSAL SCORE

Criteria	Score/ Points Possible	Criteria	Score/ Points Possible
Work Plan	9/15	Economic Analysis – Water Supply Costs and Benefits	12/15
Budget	5/5	Water Quality and Other Expected Benefits	3/15
Schedule	5/5	Economic Analysis – Flood Damage Reduction	12/15
Monitoring, Assessment, and Performance Measures	3/5	Program Preferences	8/10
Total Score (max. possible = 85)			57

#### EVALUATION SUMMARY

The following is a review summary of the proposal.

##### Work Plan

The proposal does not fully address the criterion and has insufficient supporting documentation. For Projects 1 and 2, a Categorical Exemption (CE) under Class 8 may not be adequate for the scope of work proposed and adequate compliance with California Environmental Quality Act (CEQA) is required to obtain the local, state and federal permits. For the Arundo projects (Projects 1 and 2), some Basin Plan specific monitoring and management plan elements appear to be missing from the work plan scope because the water bodies have previously been characterized to contain constituents with water quality concern, (i.e., diazinon and chlorpyrifos). Specifically, removal of vegetation and sediments in riparian areas may facilitate contaminant transport in downstream surface waters. See Chapter IV, Implementation, and Chapter V, Surveillance and Monitoring, of the Basin Plan for the San Joaquin River region for more information. Projects 1 and 2 do not contemplate the need for a re-vegetation component; re-vegetation with native species may be required in any area where Arundo is removed to prevent the return of invasive species and the erosion of sediments,

and to re-establish habitat for endangered species, if present. If a project includes waters of the United States, the project impacts would need to be mitigated—including, but not limited to, erosion and sediment control or restoration of species habitat. Although this is conceivable, the application does not provide sufficient documentation to support that this Project 4 will provide these benefits to this specific IRWM region as inferred.

## **Budget**

Budgets for all the projects in the Proposal have detailed cost information, costs appear to be reasonable, and all the budget categories are thoroughly supported with tables and written explanations. Each project includes a summary budget, supporting information, labor hours, and unit costs. The budget tables are well supported by descriptions of how costs estimates were derived and strong supporting documentation is included with each cost breakdown.

## **Schedule**

The schedule is consistent and reasonable, and demonstrates a readiness to begin construction or implementation of at least one project of the Proposal no later than six months (December 1, 2011) after the anticipated award date (June, 1, 2011). In fact, all projects are scheduled to start construction prior to December 1, 2011. The applicant has presented a detailed and specific schedule for each project that adequately documents the Proposal. Each schedule is reasonable, and consistent with work plan and budget. For example, a narrative description (“schedule notes”) is included with each individual project schedule.

## **Monitoring, Assessment, and Performance Measures**

The criterion is less than fully addressed, and documentation and rationale is incomplete as many discrepancies were observed. Project 3 does not address consistency with the Basin Plan. For the two Arundo removal projects (Projects 1 & 2), the applicant only supports that an agricultural beneficial use will be met. Description and measures relating to other important benefits (for these two Projects) as described in the Basin Plan for this specific hydrologic region are not provided. For Projects 1 and 2, output indicators for increased groundwater recharge do not appear to be directly measurable. Project 4 has only qualitative measures with respect to reduce flooding, water availability, water quality, and flooding. For the Ash Slough project (Project 1), it is unclear what data will be collected, incorporated into the Final Report to DWR, and disseminated to stakeholders (p. 6.1-6). For the Cottonwood project (Project 2), it is unclear why wildlife monitoring is not quantitatively reported or how the quality of the 300 acres of restored habitat will be quantified. Project 3 has easily measured outcome indicators to confirm the performance target.

## **Economic Analysis – Water Supply Costs and Benefits**

Above average levels of water supply benefits relative to costs can be realized through this proposal, based on the quality of the analysis and supporting documentation. Generally, applicant provided a good analysis and explanation of costs. The major water supply benefit claim is for Project 3. This project appears to provide substantial benefits to the applicant region, though it is not clear if the water diverted into the project would not have provided similar benefit in its alternative use within the San Joaquin basin. Water supply benefits of Arundo removal seem appropriate.

Project 3 would construct a pipeline to import surplus water (Class 2 and 215 Friant water plus additional water from Westside Mutual in Kern County) from adjacent districts to replace existing groundwater pumping. Total cost of those items is \$10.368 million (M) in present value (PV). Costs are shown in 2009 dollars, and capital cost matches shown in Attachment 4. Average water imported is 6,100 acre-feet (AF) to

replace annual overdraft of 3,400 AF (a study is referenced to support this number) plus add net recharge of 2,700 AF per year on average. Yields and physical benefits claimed for the project appear reasonable. Costs include purchase of the water and construction and operation and maintenance (O&M) of the pipeline. Benefit is quantified as the avoided cost of a project to physically recharge and extract the water – at \$14.08 M. Reviewer notes that an alternative cost approach should use the alternative that would most likely occur or be implemented. Continued groundwater overdraft seems like an alternative, at a current cost of \$55/AF, and increasing over time.

Madera Irrigation District's (MID) project (Project 2) PV of cost is \$2.54 M. Capital cost in Table 11 matches the value in Table 7. Water supply benefit is quantified as the value of avoided transpiration by the Arundo. Calculations seem reasonable, and water is valued at the MID's cost of water, \$60 per AF. Reviewer believes this is also representative of avoided groundwater pumping costs, so is a reasonable value. PV of water supply benefits is \$3.24 M.

Madera County's project (Project 1) PV of cost is \$2.675 M. Capital cost is slightly different than the value shown in Table 7. Although the water supply benefit is similar in kind to the other Arundo and sediment removal project, applicant does not quantify the savings here, but merely describes it.

### **Water Quality and Other Expected Benefits**

Only low levels of water quality and other benefits relative to costs can be realized through this proposal, as demonstrated by the analysis and supporting documentation. Quantified water quality/other benefits are avoided pumping costs and avoided fire suppression costs, and are small relative to total proposal cost. Qualitative ecosystem and erosion control benefits would result from Project 4.

Improvement in groundwater quality from Project 3 is described but not quantified. Other benefit is the savings in pumping costs for remaining groundwater uses. Assumptions are shown in Attachment 8.4. Hydrologic and energy cost parameters appear reasonable, but the assumed pumping (19,400 AF) that is affected by the reduced lift is not cited. PV of benefit is calculated as \$1.71 M.

Project 4 PV of costs is \$2.565 M. Erosion avoidance and habitat protection from intense fires are described but not well supported. Avoided fire suppression costs are quantified based on an existing study. PV of quantified benefits is \$0.36 M, but the qualitative benefit of avoided erosion and ecosystem damage are likely to be more significant.

### **Economic Analysis – Flood Damage Reduction (FDR)**

High levels of flood damage reduction benefits relative to costs can be realized through this proposal, and the quality of the analysis and supporting documentation, for the most part, demonstrate these benefits. While the reviewer is able to duplicate the FRAM analysis with the assumptions provided, some assumptions lacked backup from an existing study. Even with adjustments and other issues noted above, the FDR benefits are likely to be larger than the total proposal cost.

Project 1 and 2 benefits are quantified using the FRAM model with the default data on construction costs, depth damage curves, and other costs. Reviewer notes that the construction costs used in the analysis are probably higher than the actual numbers for this area. A 2D hydrologic model and digital elevation map were used to assess flood depths and inundation areas for three flood events. Failure probabilities are key parameters, and are assumed but not referenced to an existing study. Inundation areas were overlaid with county parcel and land use maps to determine structures, roads, and crops damaged. Unclear if the model

and Department of Environment Management (DEM) resolution are adequate to perform this analysis. Crop damage is almost certainly overestimated because floods are most likely during the winter when annual crops are not in the ground and many permanent crops are dormant. Using the assumptions provided, reviewer was able to replicate the applicant's exact results using FRAM. Benefits claimed are \$56 M in PV, although reviewer believes this is too high for reasons described above.

For Project 2 only avoided crop damage is claimed in the FRAM analysis. Applicant assumes 50% grapes and 50% almonds are the affected crops. While this may be reasonable for the area, it is unclear why an actual assessment could not be done. Failure probabilities, storm recurrences, and inundation areas and durations appear to be the result of observations of recent history and local experts' judgment – no formal flood analysis is referenced. Using the assumptions provided, reviewer was able to replicate the applicant's results using FRAM. Benefits claimed are \$11.2 M in PV, but this is based on some assumptions that are difficult to verify.

FDR benefits are estimated for Project 3 using an analysis based solely on assumptions of possible crop damage from Section 215 (CVP flood flow delivery) water. Reviewer considers this to be possible but speculative, and has removed it from the quantitative calculations.

FDR benefits for Project 4 are quantified based on assumptions and literature review, using plausible relationships between wildfire events, runoff rates in subsequent rainfall events, and flooding potential downstream. Nevertheless, reviewer concludes that the data and analysis are sufficient to support a qualitative description of potential benefits, but not quantitative benefits.

### **Program Preferences**

The Proposal demonstrates with a significant degree of certainty and thorough documentation that four projects will collectively implement the following Program Preferences: Regional projects or programs, Effectively integrate water management programs and projects within hydrologic region, Effectively resolve significant water-related conflicts within or between regions, Drought preparedness, Use and reuse water more efficiently, Climate change response actions, Expand environmental stewardship, Practice integrated flood management, Protect surface water and groundwater quality, and Ensure equitable distribution of benefits. Although the applicant claims the entire area is a Disadvantaged Community (DAC), but none of the projects address any critical water supply or water quality need of a DAC.